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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/930,480	08/16/2001	Jens Bohlen	225/50312	9945

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EXAMINER

ROSENBERG, LAURA B

ART UNIT	PAPER NUMBER
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3616

DATE MAILED: 08/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/930,480

Applicant(s)

BOHLEN ET AL.

Examiner

Laura B Rosenberg

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 10.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. This office action is in response to the amendment filed on June 4, 2003, in which claims 1, 3, and 25 were amended.

Specification

2. The disclosure is objected to because of the following informalities: Per the previous office action, in paragraph 0040, line 6, "B" should have been changed to "8". However, "B" was changed to "28". Therefore, the disclosure is now objected to because "28" should be changed to "8". Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 4, 6, 7, 9, 15, 16, 18, 19, 21, 24-27, 29, 30, and 32-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Hancock (5,517,877). In regards to claims 1, 25, 26, and 32, Hancock discloses a steering column (#50) for a motor vehicle having a steering shaft (#3) rotatably mounted in a tubular jacket (#4), wherein the tubular jacket is secured in use at a vehicle bodywork end (via #6, 15) on two rails (side walls of #8, best seen connected to tubular jacket in figure 1; #13, 15) extending substantially in an axial direction, the tubular jacket being guided between the rails in

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the event of an axial displacement. Each rail is provided with a deformation element (#7, 7A) plastically deformable and secured at least at one end (best seen secured to #8 in figure 2 and secured to #13, 15 in figures 5, 6) on a respective rail, with absorption of energy, in the event of an axial displacement of the tubular jacket in case of a crash in a manner such that the respective at least one deformation element is deformed by rolling friction via deflector structure (#9, 10, 10A, 12, 27) fixedly disposed on the tubular jacket (column 2, lines 61-62; column 3, lines 5-10, 14-17, 43-46).

In regards to claims 2, 26, and 27, Hancock discloses the tubular jacket (#4) being fixed on the rails via plastic shearing pins (#18).

In regards to claims 4, 26, and 27, Hancock discloses the plastic shearing pins (#18) being releasable from one of the tubular jacket and the rails under a predetermined force (column 3, lines 39-43).

In regards to claims 6, 7, and 9, Hancock discloses the rails being formed with slots (tracks formed by #8A, #17) extending substantially axially for accommodating longitudinal adjustment of the tubular jacket (column 2, lines 52-54).

In regards to claims 15, 16, 18, 19, 29, and 30, Hancock discloses the deflector structure including bolts (#10, 10A) and housing edges (#9, 12, 27) on the tubular jacket.

In regards to claim 21, Hancock discloses at least one of radii and spacing between the deflector structure (#9, 10, 10A, 12, 27) being variable and selectively settable (best seen in variations between embodiment in figures 2-4 versus embodiment in figures 5-7).

In regards to claim 24, Hancock discloses that the energy absorbable by the deformation element can be set by varying the material thickness or width of the deformation element (column 3, lines 51-53).

In regards to claim 33, Hancock discloses the first and second deformation elements being disposed at respective opposite sides of the tubular jacket (each leg of #7, 7A is on either side of tubular jacket as best shown in figures 2, 3, 6).

In regards to claim 34, Hancock discloses the deflection structure including respective bolts (#10, 10A) carried by the tubular jacket, which in use are partially wrapped by the respective deformation elements (best seen in figures 2, 3, 5-7).

In regards to claim 35, Hancock discloses the deflection structure including respective housing edges (edges of #9, 12, 27) on the tubular jacket.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3, 5, 8, 17, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hancock (5,517,877). In regards to claim 3, Hancock discloses the plastic shearing pins (#18) being injection molded through holes (not labeled) drilled in the rails (column 3, lines 32-34; through #12, 15 in figures 5, 6). Hancock does not disclose the shearing pins being injection molded through holes drilled in the tubular

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jacket. It would have been obvious to one skilled in the art at the time that the invention was made to modify the steering column of Hancock such that it comprised shearing pins injection molded through holes drilled in the tubular jacket as claimed so as to allow the jacket to break away when impacted by a force in the event of a collision.

In regards to claim 5, Hancock discloses the plastic shearing pins (#18) being releasable from one of the tubular jacket and the rails under a predetermined force (column 3, lines 39-43).

In regards to claim 8, Hancock discloses the rails being formed with slots (tracks formed by #8A, #17) extending substantially axially for accommodating longitudinal adjustment of the tubular jacket (column 2, lines 52-54).

In regards to claim 12, Hancock discloses the at least one deformation element (#7, 7A) including a sheet metal strip (column 3, lines 50-51).

In regards to claim 17, Hancock discloses the deflector structure including bolts (#10, 10A) and housing edges (#9, 12, 27) on the tubular jacket.

In regards to claim 23, Hancock does not disclose the travel distance of the tubular jacket in the event of an accident. It would have been obvious to one skilled in the art at the time that the invention was made to modify the steering column of Hancock such that it comprised a guiding of the tubular jacket between the rails through a forward travel of at least approximately 100mm in the event of an accident as claimed since it has been held that discovering an optimum value as a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA

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1980). Further, it would have been obvious to use a distance of at least 100mm so as to allow energy to be efficiently absorbed during a collision.

7. Claims 10-13, 14, 20, 22, 28, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hancock (5,517,877) in view of Li et al. (6,322,103). In regards to claims 10-13, 14, and 28, Hancock discloses the at least one deformation element (#7, 7A) including a metal wire (column 3, lines 50-51). Hancock does not disclose the deformation element being a sheet metal strip. Li et al. teach a steering column (#10) for a motor vehicle having a steering shaft (#14) rotatably mounted in a tubular jacket (#12), wherein the tubular jacket is secured in use at a vehicle bodywork end (#24) on two rails (#21) extending substantially in axial direction, the tubular jacket being guided between the rails in event of axial displacement (column 2, lines 62-67). There is at least one deformation element (#36; other embodiments are #58, 78, 96, 122, 152, 180, 198) that is plastically deformable with absorption of energy, and in the event of an axial displacement of the tubular jacket in case of a crash, the respective at least one deformation element is deformed by rolling friction via deflector structure (#30, 43; different deflector structure for each embodiment) fixedly attached on the tubular jacket (column 3, lines 7-9; similar for other embodiments). The at least one deformation element (#36) includes a sheet metal strip (column 3, lines 13-14). It would have been obvious to one skilled in the art at the time that the invention was made to modify the deformation element of Hancock such that it comprised a sheet metal strip as claimed in

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view of the teachings of Li et al. so as to provide a larger surface for plastic deformation, thus energy absorption, to occur (Li et al.: column 1, lines 62-67).

In regards to claim 20, Hancock discloses the deflector structure including bolts (#10, 10A) and housing edges (#9, 12, 27) on the tubular jacket.

In regards to claims 22 and 31, Hancock does not disclose the radii and spacing between the deflector structure being set as a function of respective crash conditions, nor does Hancock disclose means for varying the position of the bolt and housing edge of the deflection structure. Li et al. teach at least one of radii and spacing between the deflector structure are variable and selectively settable as a function of crash conditions (column 3, lines 21-37; column 4, lines 19-35; different conditions and adjustments for other embodiments). In addition, there are means (#43, 43A-43G) for varying the position of the deflector structure components. It would have been obvious to one skilled in the art at the time that the invention was made to modify the steering column of Hancock such that it comprised a variable deflector structure with radii and spacing set as a function of crash conditions as claimed in view of the teachings of Li et al. so as to adjust the force resisting linear translation of the tubular jacket and the corresponding performance of the energy absorber (Li et al.: column 1, lines 62-67).

Response to Arguments

8. Applicant's arguments filed June 4, 2003 have been fully considered but they are not persuasive.

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9. Regarding applicant's arguments on pages 7-8, the Hancock reference discloses a tubular jacket (#4) secured in use at a vehicle bodywork end (via #6, 15) on two rails (side walls of #8 fit into grooves #8A, which serve as "rails") and guided between the rails in the event of an axial displacement. Each rail is provided with a deformation element (each leg of #7, 7A serves as a deformation element) plastically deformable and secured at least at one end (best seen secured to #8 in figure 2 and secured to #13, 15 in figures 5, 6) on a respective rail, with absorption of energy, in the event of an axial displacement of the tubular jacket in case of a crash in a manner such that the respective at least one deformation element is deformed by rolling friction via deflector structure (#9, 10, 10A, 12, 27) fixedly disposed on the tubular jacket (column 2, lines 61-62; column 3, lines 5-10, 14-17, 43-46). Thus, "this arrangement with the tubular body of the steering column assembly supported between the pair of rails" is disclosed in the Hancock reference. The examiner would like to point out that even though the steering shaft and tubular jacket are not shown in figures 2 and 3, these drawings are displayed looking down onto the steering column assembly in the direction of "A" ("A" is shown best in figure 1). Therefore, if the steering shaft and tubular jacket had been included within these figures, shaft and jacket would reside between the rails (#8, 8A in figures 2, 3), thus "the support of the steering column" would be "between a pair of guide rails supported at the vehicle body structure."

10. Regarding applicant's arguments on the bottom of page 8 with respect to claim 23, the examiner maintains her rejection that discovering an optimum value of a result effective variable involves only routine skill in the art.

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11. Regarding applicant's arguments on page 9, the examiner maintains that the Li et al. reference teaches the use of a sheet metal strip as a deformation element within a steering column so as to provide a larger surface for plastic deformation, thus energy absorption, to occur. The Li et al. reference provides sufficient motivation for combining this feature with the Hancock reference, and the Hancock reference would not be destroyed, nor would its intentions be changed due to this modification. Further, the use of sheet metal strips as deformation elements to be deformed by rolling friction caused by a vehicle occupant's collision with a steering wheel, and thus a steering column, in the event of a collision is old and well known in the art.

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura B Rosenberg whose telephone number is (703) 305-3135. The examiner can normally be reached on Monday-Thursday, alternating Fridays 7:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Dickson can be reached on (703) 308-2089. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9326 for regular communications and (703) 872-9327 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.

Laura B. Rosenberg

LBR
August 12, 2003

Paul N. Dickson 8/13/03
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